

REMARKS/ARGUMENTS

Claims 1-27 are pending in the application; reexamination and consideration are hereby requested.

Claims 19-23 are rejected as failing to comply with the enablement requirement.

Claims 1-23 are rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-7, 9-15 and 18-23 remain rejected as being anticipated by Figures 2-3 of the applicant's admitted prior art.

Since the Examiner considers that Claims 24-27 are allowable, they have been kept unchanged.

Claims 1 has been rewritten to include all the limitations of claim 5 and 8 to avoid the Examiner's objections.

Claim 11 has also been rewritten to include all the limitations of claims 13 and 16 to avoid the Examiner's objections.

Claim Rejections -35 USC § 112

Claims 19-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

In order to clarify the term "region of operation", Applicants have inserted the current collector of the Trafton-Hastings clamp transistor to currently amended claim 19. As a matter of fact, the detection of a region of operation is performed

by detecting the values of the collector current of the Trafton-Hastings clamp transistor.

The "region or operation" is a term of the art intended to convey the following mathematical concept. A function maps a plurality of input variables onto an output variable. The input variables, which are real scalar quantities, define a space. A region of operation is a bounded but not necessarily finite division of this space. This term is constantly used when referring to transistors "operating in forward bias" or the like.

In order to clarify the terms "a plurality of substantially equal perturbation currents", claim 21 has been inserted in currently amended claim 19. Indeed, the perturbation currents that are defined to be substantially equal are those that are substantially proportional to the collector current of the Trafton-Hastings clamp transistor.

Regarding the term "to add perturbation currents to those of input currents", the current addition is performed by Kirchoff's current law. The current leaving a node equals the sum of current entering the node. The currents entering the node associated with a given input transistor are (1) the input currents and (2) the perturbation currents. The current leaving the node is the current entering the transistor.

Original claims 1, 5 and 8 have merged into a currently amended claim 1 which should therefore avoid the objections of lack of clarity and enablement.

In the same way, original claims 11, 13 and 16 have merged into a currently amended claim 11 which should also avoid the objections of lack of clarity and enablement.

Claim Rejections -35 USC § 102

The gist of the present invention rests on the fact that a plurality of perturbation currents are provided when the translinear circuit operates within the at least one segment containing a removable singularity. In other words, the present application claims a method of perturbing a removable singularity by addition of a perturbation current WHEN the circuit operates within a segment of a piecewise-polynomial-continuous transfer function that contains a removable singularity.

Figures 2 and 3 does not anticipate the present invention since the circuit for providing a plurality of perturbation currents when the translinear circuit operates with the at least one segment containing a removable singularity. This feature is represented by transistor M1, M2 and M3.

Transistors M1, M2, M3 and M4 in figure 3 are a current mirror, but this mirror does not attempt to perturb the removable singularity; instead it attempts to compensate for a beta error – furthermore, its current is not switched in-and-out of the circuit depending upon the region of operation, whereas the mirror of figure 6 (representing the present invention) receives the collector current of the T/H clamp transistor, which flows only within the region of operation containing the removable singularity.

Therefore, currently amended claim 19 has also been amended to contain features of a method for perturbing a removable singularity in a piecewise-polynomial-continuous transfer function of a translinear circuit incorporating a Trafton-Hastings clamp transistor according to the present invention.

More specifically, method claim 19 comprises:

detecting values of a collector current of said Trafton Hastings

clamp transistor wherein a removable singularity exists within a transfer function of said translinear circuit (Trafton-Hasting clamp transistor Q7 conducts when the circuit is in the region of operation where the removable singularity exists; the use of this collector current enables to detect the region of operation);

determining a plurality of input currents to the translinear circuit whose magnitude substantially equals zero at the removable singularity (the removable singularity occurs when input current I_x fall to zero; identifying these input currents as the ones that require perturbation embodies the step of determining what needs to be perturbed);

defining a plurality of substantially equal perturbation currents by defining said perturbation currents to be substantially proportional to said collector current of said Trafton-Hastings clamp transistor (mirror M1-M3 transforms the collector current of transistor Q7 into currents that are pulled from the emitters of input transistors Q3 and Q5; these are the perturbation currents, and the construction of this mirror therefore defines these currents);

and within the region of operation values of the collector current that contain a singularity adding a respective one of said plurality of perturbation currents to each of said input currents (by connecting the drain of M2 to the emitter of Q3 in parallel with one of the I_x current sources, and the drain of M3 to the emitter of Q5 in parallel with the other of the I_x current sources, we are adding the perturbation currents to the input currents).

In light of the above, it is respectfully submitted that the present application is in condition for allowance, and notice to that effect is respectfully requested.

While it is believed that the instant response places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is respectfully requested that the Examiner contact the undersigned in order to expeditiously resolve any outstanding issues.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Tum Thach", is enclosed within a dotted oval.

Tum Thach
Reg. No. 61,034
Texas Instruments Incorporated
PO Box 655474, M/S 3999
Dallas, Texas 75265
Tel: 972.917.2152
Fax: 972.917.4418